

HARDWOOD GRADE STICK

The most important features of the National Hardwood Lumber Association standard rules for Firsts and Seconds (FAS), No. 1 Common (No. 1 C), and No. 2 Common (No. 2 C) have been condensed by the Forest Products Laboratory for use as a grade stick comparable to a lumber rule. Attached is a chart that may be used to make the stick.

It must be understood that the grade stick is not sufficient in itself to grade lumber for shipping and cannot take the place of the technical provisions and full text of the National Hardwood Lumber Association rules. It is intended simply as a guide in the production of maximum grades. A rule book covering hardwoods and cypress can be obtained from that Association, 2408 Buckingham Building, Chicago, for ten cents.

In brief, hardwood lumber is graded on the basis of the proportion of the total surface measure of the board that can be worked up in a definitely limited number of clear face cuttings, each passing a minimum size requirement.

How to Use Grade Stick

To determine if a board will make a given grade (1) lay the stick across the poor face of the board (end flush with the outside edge of board). Pick out the space corresponding to the length of the board tabulated at the end and read from its intersection with the near edge of board the number of cuttings allowed for that grade. Explanation of alternative numbers of cuttings is given later. (2) Determine from the board that the cuttings pass the minimum size requirement shown on the handle end, (3) that their number is within the limits indicated, and (4) that their total surface area is at least the portion of the total surface measure of the board required, as shown on the handle end.

Practice will develop for rough grading a reasonably close approximation by eye whether the surface areas included in the cuttings equal the percentage of total surface area of the board required by the rules. For example, whether the sum of the cuttings comprise $1\frac{1}{2}$, $1\frac{3}{4}$, $2\frac{1}{4}$, $2\frac{3}{4}$, $3\frac{1}{2}$ (equivalents to 91- $2\frac{2}{3}$, 83- $1\frac{1}{3}$, 75, 66- $2\frac{2}{3}$, and 50 per cent respectively). For accurate determination, in cases where visual inspection is inadequate, the usual method is to determine how many units of twelve square inches each are included in the percentage of total surface area required by the rules and note whether the sum of the units in the cuttings equals or exceeds this. The number of units in a cutting is its width in inches and fractions multiplied by its length in feet and fractions. The number of units in a board is twelve times its surface measure in feet, and

¹Maintained at Madison, Wisconsin in cooperation with the University of Wisconsin.



91-2/3% is 11, 83-1/3% is 10, 75% is 9, 66-2/3% is 8, and 50% is 6 times the surface measure. For example, a board having a 7-foot surface measure must have 66-2/3 per cent or 56 units (7x8) in clear face cuttings. The cuttings measure 6 inches by 4-1/2 feet or 27 units, and 7 inches by 5 feet or 35 units. The total units in the cuttings, 62, exceed the 56 required to make this board a No. 1 C.

A cutting may be the entire board, or a portion obtained by cross-cutting the full width, or ripping the full length, or both, no allowance being made for saw cut. The surface measure of the board is expressed in full feet with fractions up to and including 1/2 foot (as shown on the board rule) dropped, and above the 1/2-foot mark counted as the next higher foot. For instance, a board that measures 7-1/2 feet actual is taken as 7 feet, while one that measures 7-5/8 feet is taken as 8 feet.

In most cases it will be noted from the stick that an extra cutting conditioned upon an increase in the amount of clear surface required is allowed. Furthermore, in most cases alternative minimum sizes of cuttings are permitted. For example, a board having six surface feet is a No. 1 C if 2/3 of the poor face can be had in 2 clear face cuttings, or if 3/4 can be had in 3 clear face cuttings, each at least 3 by 36 inches or 4 by 24 inches, intermediate equivalents not allowed -- i.e., 3-1/2 by 30 inches.

The short vertical lines on the diagrams applying to grades indicate for the convenience of sawyers and edgemen where the divisions occur in green lumber.

Suggestions for Making Stick

Use a dry piece of wood 3/8 by 2-9/16 by 30 inches. Cut out the two strips and paste one to each wide face of the stick, using good maulage and being careful to get the left end of diagram exactly even with the end of the stick. The durability of the paper can be greatly increased by coating heavily with varnish; wear may be minimized by cutting 1/16-inch from each face where the paper is to be pasted, thus giving a cross section approximating the capital I, so that the paper fits snugly between the two bars and is protected from abrasion by them. A couple of coats of varnish should then be applied and the handle cut down for convenience of user. An alternative to countersinking the paper is to put a raised bead down the center over the heavy black line after pasting the paper to the stick (coarse wire held in place with a few small staples). A metal guard at the end as a board rule facilitates placing the stick accurately against board edge.

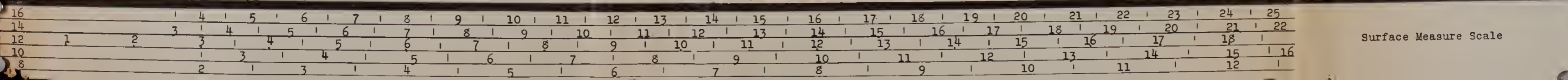
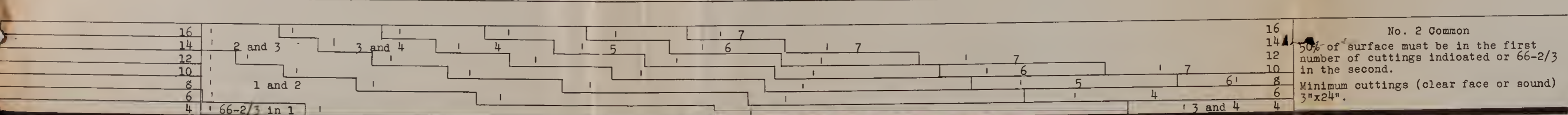
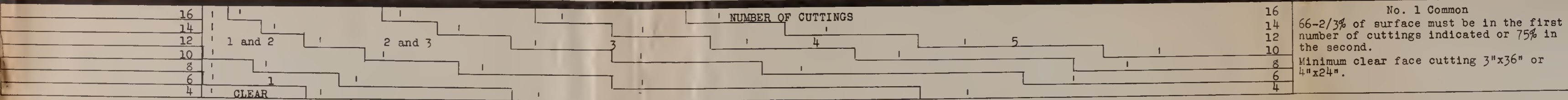
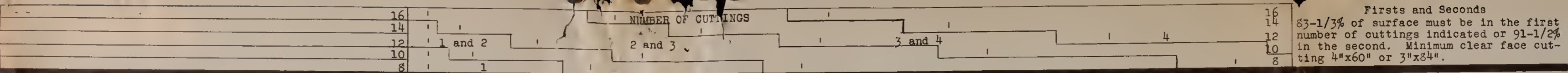
Additional copies of the chart may be secured from the Forest Products Laboratory for five cents each. If a demand develops for a stick of more durable form, arrangements may be made for manufacturing one with the data etched on wood.

Contributed by A. C. Wollin,
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April, 1932.



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